

2.0 POLYCHLORINATED BIPHENYLS (PCBS)

Canadian Workgroup co-chair: Ken De

U.S. Workgroup co-chair: Tony Martig

Progress Toward Challenge Goals

Canadian Challenge: Seek by 2000, a 90 percent reduction of high-level PCBs (>1 percent PCB) that were once, or are currently, in service and accelerate destruction of stored high-level PCB wastes which have the potential to enter the Great Lakes Basin, consistent with the 1994 COA.

U.S. Challenge: Seek by 2006, a 90 percent reduction nationally of high-level PCBs (>500 ppm) used in electrical equipment. Ensure that all PCBs retired from use are properly managed and disposed of to prevent accidental releases within or to the Great Lakes Basin.

As of April 2002, approximately 84 percent of high-level PCB wastes had been destroyed, up from approximately 40 percent in spring 1998 when work in support of the GLBTS commenced. Over the past year, approximately 1,000 tonnes of high-level PCBs were destroyed (Figure 2-1), and as of April 2002, approximately 703 of those sites (both federal and private) are PCB-free (no PCBs in use or in storage, see Figure 2-2).

Rates of PCB phase-out have declined in recent years because remaining PCB equipment is difficult or expensive to replace and the fate of the Canadian PCB incinerator in Swan Hills, Alberta, is still uncertain. However, the Canadian government is planning to regulate PCB phase-out dates (see description under Regulatory Activities). Awareness among owners continues to increase due to continuing PCB outreach, sector mail-out of information, and voluntary commitment letters. Newer facilities and options are now available in Ontario for PCB decontamination and destruction, in addition to the Alberta Swan Hills incinerator. Owners of large quantities have been able to incorporate PCB phase-out/destruction activities into multi-year operating plans.

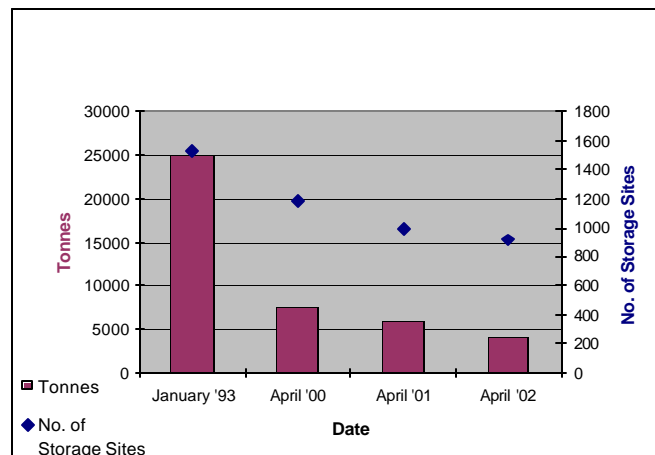


Figure 2-1. High-Level PCBs and Number of Storage Sites in Ontario

Distribution of PCBs In Use and In Storage by Industry Sector

The pie charts in Figure 2-3 identify the priority sectors that still have a considerable amount of high-level PCBs in use. These sectors include iron/steel, school/care facility/food processing (sensitive areas), governments, and mining/smelting. These sectors need to be targeted for decommissioning PCBs.

Figure 2-3 identifies provincial (Ontario) and municipal governments, iron/steel, and forestry/pulp/paper as three major sectors that need to be targeted for destruction of high-level PCBs in storage.

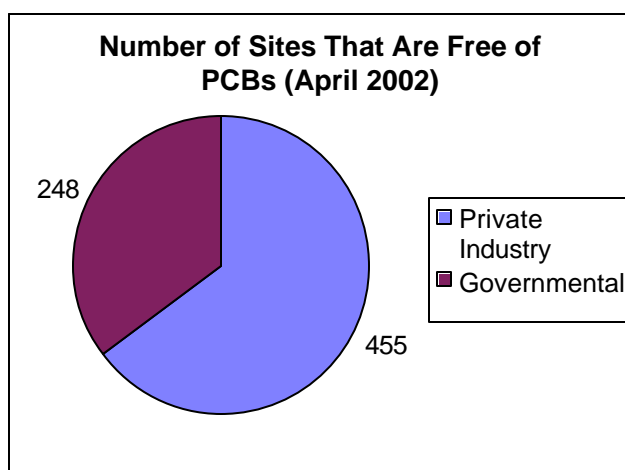


Figure 2-2. Number of Sites That Are Free of PCBs

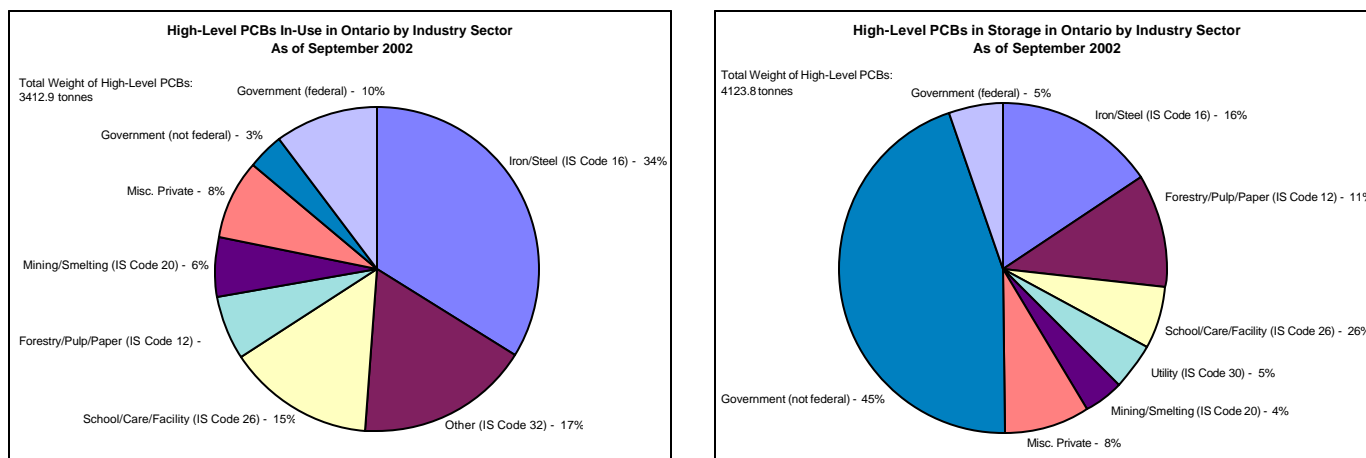


Figure 2-3. High-Level PCBs In Use and In Storage In Ontario

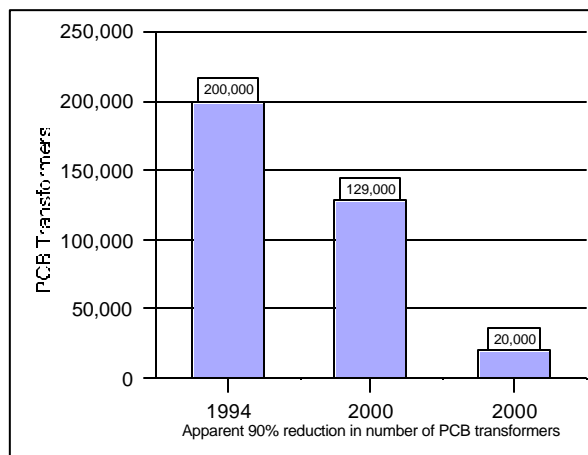


Figure 2-4. U.S. PCB Transformer Inventory Estimates

According to annual reports submitted to US EPA by PCB disposers, about 71,000 PCB transformers and over 141,000 PCB capacitors were disposed of between 1994 and the end of 2000. After applying this to the 1994 baseline, the estimated amount remaining at the beginning of 2001 is less than 129,000 PCB transformers and less than 1,332,000 PCB capacitors. However, the amount of PCB equipment disposed since 1994 is likely higher and the amount remaining is likely lower. The reports do not include PCB transformers that have been reclassified or some capacitors which may be on the reports under the category of PCB article containers. The 1999 PCB Transformer Registration Database shows that there are

approximately 20,000 PCB transformers currently registered and in-use in the U.S., but the actual number remaining in use is likely higher. Nonetheless, reductions of PCB transformers and capacitors continue to occur. US EPA continues to evaluate ways to try to better quantify the data and help track progress toward meeting the U.S. challenge.

Workgroup Activities and the 4-Step Process

The focus of the PCB Workgroup in the past year has been on Steps 3 and 4: the identification and implementation of reduction options. Workgroup activities included continued development of an outreach and communication plan and the Workgroup web page, planning and implementation of outreach efforts, and seeking voluntary reduction of PCB electrical equipment.

Reduction Activities

PCB Reduction Commitment Letters

Canada: PCB reduction commitment letters were first mailed in late 1999. Letters continue to be sent to new industry sectors. In October 2002, an additional 400 letters were sent to school boards and other sensitive sites (food, beverage, hospitals, care facilities, and water treatment industries).

U.S.: Although US EPA has not received any new commitments since November 2001, it worked toward implementing a national mailing combined with an advertisement campaign. US EPA drafted information for the mailing and contacted many facilities on the PCB transformer registration database and approximately 30 national trade associations representing facilities from industry sectors associated with the companies that registered PCB transformers. US EPA also met with several States to confirm their PCB reduction status. The national mailing and advertisement campaign should be implemented in 2002. Current plans are to mail information

on reducing PCBs to about 10,000 individual businesses and 30 national trade associations. Follow-up, person to person, will be conducted with many of the individual facilities and all of the associations. Additional follow-up is needed with the States.

U.S. PCB Phasedown Program: US EPA began work to expand the offer of participation in the PCB Phasedown program to additional facilities in the Region, seeking their commitment to reduce high-level PCBs used in electrical equipment as part of the pilot project.

U.S. PCB Phase Out at Federal Facilities: In an effort to reduce the PCB equipment owned by the U.S. government, US EPA drafted a letter from a senior US EPA official to counterparts at the other federal departments or agencies seeking reductions of their PCBs. The draft letter is under review by US EPA Headquarters.

Information Resources: The web site for the PCB Workgroup was updated, and information that the Workgroup had been working on was posted (see www.epa.gov/glnpo/bns/pcb). The new information included photographs of transformers and capacitors, which should help increase the awareness of the types of equipment that may contain PCBs by displaying actual examples of the equipment; a fact sheet on submersible well pumps; and a case study on the removal of PCBs provided by Bethlehem Steel, which is intended to promote the removal of PCBs by companies that have not yet done so by providing examples of beneficial factors considered when companies decided to remove their PCBs. In addition, the Workgroup is updating the standard presentation that can be used by members and non-members to help describe the Binational Toxics Strategy, the PCB challenges, Workgroup actions, and PCB reduction commitments being sought when they meet and associate with other potential stakeholders. All of this information is intended to encourage and facilitate the identification and removal of PCB equipment.

Outreach and Communication: A survey was sent to PCB Workgroup members on the utility of the PCB website, which was reformatted in 2001 (<http://www.epa.gov/glnpo/bns/pcb>). While respondents were satisfied with many aspects of the website, suggestions for further improvements were made. These included, for example, providing more information on health and environmental impacts of PCBs, more information on reduction activities, and additional links to other websites. Many of the suggestions made are being implemented.

The Workgroup previously decided to try to publish an article on PCB disposal trends (e.g., disposal costs are expected to continue to rise), based on a compelling presentation made to the Workgroup. The Workgroup has made initial contacts to several environmental management journals.

The Workgroup has developed a standard presentation that can be used by members and non-members to help describe the Binational Toxic Strategy, the PCB Workgroup challenges, actions, and PCB reduction commitments being sought when they meet and associate with other potential stakeholders.

The Canadian Workgroup leader has developed a new (draft) plan of outreach and recognition to attempt to increase the rate of PCB phase-out. The main elements of the draft plan are to

identify and recognize contributions by an individual company, or their industry association, that go beyond regulatory requirements and to publicize success stories. Details of this plan are under discussion by the Workgroup.

Minnesota Pollution Control Agency (MPCA) Small Quantity PCB Owner Disposal

Cooperative: The MPCA continues to work with municipalities and rural electric cooperatives, as well as other small owners of PCB equipment, to accelerate disposal of this equipment. Since receiving a grant, MPCA has secured manufacturers' lists of serial numbers of distribution transformers and has contacted, via letter and phone, nine facilities that were identified as high priorities through a voluntary 1997 PCB survey in northeastern Minnesota. One business reported removing four high-level transformers, and one city reported being PCB free. Another city is close to being PCB free (final report expected in January). The other municipalities and co-ops has expressed great interest in the program.

From discussions with transformer owners, it seems likely that the project will mostly deal with PCB-contaminated transformers (i.e., 50-500 ppm) rather than high-level transformers (>500 ppm). Follow-up calls will begin in early December to discuss PCB inventories in detail. Subsequent matching against the manufacturers' lists will further define this issue.

U.S. PBT National Action Plan for PCBs: US EPA continued to work on the draft PBT National Action Plan for PCBs. The draft plan should be released for public comment in 2003. Reducing high-level PCBs used in electrical equipment is one the priorities identified in the plan. US EPA is currently evaluating several proposed projects related to the GLBTS PCB challenge on the phase-out of PCB equipment. These include several outreach initiatives and a project to measure PCB concentrations in ambient air around in-use and in-storage electrical equipment.

Regulatory Activities

Canadian Regulatory Activities: Environment Canada's three PCB regulations are being amended and targeted for Canada Gazette publication in 2002 and 2003. These regulations are:

- 1) The Chlorobiphenyl Regulations (1977),
- 2) The Storage of PCB Material Regulations (1992), and
- 3) Export of PCB Regulations (1996).

Environment Canada is currently drafting revisions to the Chlorobiphenyl Regulations and Storage of PCB Materials Regulations under the Canadian Environmental Protection Act. The most significant revisions to the regulations will be the imposition of strict phase-out dates for certain categories of PCBs. Specifically, the following dates are proposed:

- Phase-out of most high-level (>500 ppm) PCBs in-service by the end of 2007,
- Phase-out of most low-level (50-500 ppm) PCBs in-service by 2014,
- Phase-out of all PCBs in storage by the end of 2009 and allow in-service PCBs to be transferred to storage for one year or less,
- Phase-out of most high-level and low-level PCBs from sensitive locations within three years of the proposed regulations coming into force,

- Decontamination of all out-of-service liquids containing PCBs to less than 2 ppm (previously liquids and solids up to 50 ppm could be re-used, recycled or disposed in a landfill).

Extensive public consultation was conducted, and the revised regulations should be published in the Canada Gazette by the end of 2003. More information and updates can be found on the Environment Canada website at <http://www.ec.gc.ca/pcb/>.

Related Activities

PCB Federal Databases in Canada: Federal PCB databases can now be accessed and read from the greenlane website: <http://www.ec.gc.ca/PCBDatabase/>. The site has several features including:

- Basic and advanced search capabilities for finding company and PCB inventory information from the PCB databases;
- Detailed search criteria to find specific information on companies and their PCB inventories;
- A report generator that allows users to format the results of a search and save their reports in either a grid format, Microsoft Excel format, or a printer friendly version format.

Access to the databases is read-only and is limited to those who have an approved login account.

Industry Sector PCB Success Stories

CANADA

Utilities:

- 42 electrical utilities submitted voluntary commitment letters to Environment Canada
- A number of small to medium-sized utilities in Ontario have achieved 90 percent or better high-level PCB reduction targets:
 - * Festival Hydro (Stratford, Ont.) – has eliminated all high-level PCBs
 - * Hydro Hawkesbury – eliminated all PCBs by 1999
 - * Hydro Ottawa – removed all high-level PCBs from service and is planning to remove and treat all low-level PCBs
 - * Hydro One (formerly of Ontario Hydro) is free of all high-level PCBs, but still has several small stations and other sources of low-level PCBs. The company has introduced a PCB management program that extends to the year 2020.
- Follow-up will be conducted with utilities with PCBs remaining in use/in storage, who will be asked to commit to develop voluntary destruction plans.

Steel Sector:

- Four steel companies have signed commitment letters.
- Algoma Steel destroyed 13,300 kilograms (8,300 litres) of PCBs and voluntarily committed to eliminate 71,103 kilograms (44,000 litres) of PCBs by December, 2005.
- Stelco achieved a 91 percent reduction of PCBs in storage and a 41 percent reduction of PCBs in service.

- Slater Steel finished removal of all PCBs in 1998.
- Follow-up is being conducted to obtain progress updates and to seek participation of other steel companies.

Automotive:

- The Canadian automotive industry destroyed 4,359 kilograms (133,495 litres) of high-level PCBs in Ontario.
- General Motors, St. Catharines in Ontario is now PCB-free.
- Daimler-Chrysler Canada removed all high-level PCBs from transformers and capacitors and sent them to Swan Hills for destruction.
- Follow-up is being conducted with key companies that may still have PCBs.

Government:

- Windsor and local municipalities in Essex County sent 65,000 kilograms of PCB-contaminated materials to Swan Hills for destruction.
- The federal government has aggressively phased-out PCBs, providing necessary funding to all departments. The Ontario provincial government sites need to become PCB-free as soon as possible. The PCB Workgroup will identify the list of remaining Canadian government sites that need to be PCB-free.

Sensitive Areas:

- In response to an October 2002 mail-out for voluntary PCB reduction commitments, a number of hospitals, schools, and food processing facilities have recently reported being “PCB-free” (see a few sites listed below). Responses are due by the end of November 2002 and will be followed up with later.
- Conestoga College and Wilfrid Laurier University have eliminated all high-level PCBs from their inventories.
- Norfolk General Hospital, St. Joseph’s Hospital, Sault Area Hospital, Mohawk Hospital in Hamilton, and the London District School Board are PCB-free.
- Shur-Gain, Floradale Feed Mill Ltd, Schneiders Food, St. Lawrence Starch, Coca- Cola, Chatham, Elliot Brothers Grain and Feed, and Canamera Foods-Hamilton Plant are PCB-free.
- The Frito Lay, Canada, Cambridge plant is PCB-free.

Others :

- CPPI (Canadian Petroleum Producers Association) and its members have eliminated 90 percent of PCBs thus far.
- General Electric Canada operated a transformer manufacturing facility in Toronto from 1904 until 1991. During 1997-1998, approximately 5,700 tonnes of soil were transported to the Bennett Environmental facility in St. Ambroise, Quebec, for treatment and disposal. In addition, approximately 15 tonnes of other PCB materials were transported to Swan Hills in Alberta for treatment and disposal.

U.S.

General Motors. For several years, General Motors (GM) has been phasing out PCBs from North American facilities. GM's goal is to remove, replace, retrofit, or decontaminate all GM-owned PCB and PCB-contaminated transformers in the U.S. by 2003. In 2001, GM completed the removal of all PCB transformers from its U.S. plants. Consequently, GM estimates that the company saved \$5.5 million, with an additional savings of \$1.5 million per year in operating costs.

GM conducted two life-cycle cost analyses: 1) retaining the transformers, and 2) replacing or retrofitting them. The life-cycle analyses estimated the costs for compliance, preventative maintenance, repairs, energy losses, spill clean-up, and removal and disposal of the transformer and fluid at the end of its life. GM estimated that it would cost approximately \$150 million to replace or retrofit its PCB transformers, and approximately \$300 million to retain them. The high costs associated with accidental releases and subsequent clean-ups were the driving force behind GM's decision to phase out PCB materials.

Ford Motor Company. Ford Motor Company committed to phase out all PCB transformers globally by the end of 2010. Referenced to a 1995 baseline, 62 percent of the PCB transformers were phased out in 2001, and 95 percent of the PCB transformers are scheduled to be phased out by the end of 2006, financial conditions permitting.

Cleveland-Cliffs. Cleveland-Cliffs is the leading supplier of iron ore products to the North American steel industry. A voluntary PCB reduction program was initiated by Cleveland-Cliffs several years ago. At its U.S. operations, PCBs have been eliminated at five facilities. Two other facilities have achieved reductions of approximately 50 percent and 25 percent, respectively.

American Electric Power. Since the promulgation of regulations banning the manufacture and limiting the use of PCBs, American Electric Power (AEP) has systematically reduced PCB containing electrical equipment use as system reliability and economics allow. Much of the reduction comes from the process of systematically retiring or decommissioning electrical equipment. Company policy calls for the eventual retrofitting or replacement of known PCB-containing equipment.

As a result of these actions and policies, within the Great Lakes Basin, AEP has no known PCB transformers, PCB T/R sets, PCB capacitors on the distribution line system, or PCB capacitors in AEP substations.

Exelon Energy Corporation. Exelon Energy's PCB phase-out plan continued in 2001. Sixty-two pieces of PCB equipment were retro-filled with non-PCB fluid, and 518 PCB capacitors were removed from its system. All of the PCB fluid from the equipment was disposed of in accordance with Federal PCB regulations.

Instituted by Exelon's predecessor companies more than a decade ago, this voluntary program has achieved the removal—or replacement of PCB-filled (fluid with greater than 500 parts per million of PCBs) equipment—of the following:

- almost all transformers;
- all known PCB transformers in commercial buildings;
- all known PCB distribution equipment outside of substations; and
- 53 percent of all PCB capacitors in PECO Energy substations and 80 percent of all PCB capacitors in ComEd substations.

Exelon continues to explore opportunities for replacing its remaining PCB-filled equipment with advanced, energy-efficient, non-PCB filled alternatives.

USWAG (Utility Solid Waste Activity Group) PCB Reduction Efforts. Over the last year, USWAG electric and gas utility companies continued to conduct a variety of PCB reduction efforts. Many members voluntarily removed virtually all known PCB transformers. Similar voluntary reduction efforts continue with primary PCB capacitors, with many members having removed virtually all large PCB capacitors from their systems or continuing with programs to systematically achieve this result. For example, Detroit Edison is in year 8 of a 10-year commitment to phase out all large substation PCB capacitors. Last year, Detroit Edison removed a total of 869 capacitors from its system, resulting in the removal of approximately 28,400 kilograms of PCB oils from the company's inventory. These efforts are representative of many USWAG member company PCB reduction programs throughout the country.

Additionally, most USWAG companies have systems in place to ensure that any PCB-contaminated equipment identified during repair/servicing is automatically disposed of and not returned to service. For example, Duke Energy identifies and voluntarily disposes over 500 PCB-contaminated transformers per year. Such disposal efforts, combined with voluntary retrofit/reclassification programs, result in the continued reduction of PCB-containing equipment from utility inventories across the country.

Next Steps

The Workgroup plans to continue its core activities, including the following:

PCB Reduction Commitments: The Workgroup will continue seeking commitments to reduce PCBs through PCB reduction commitment letters and other PCB phase-out efforts.

Outreach/Sharing Information: The Workgroup will continue to develop, distribute, and post on the Workgroup website, information which can facilitate and promote, as applicable, the identification and removal of PCB equipment. These include photographs of electrical equipment, fact sheets, case studies which identify reasons companies remove PCBs, and a standard presentation of the PCB Workgroup's challenges and activities. The Workgroup will also continue to consider incentives for removing PCB equipment.